# **Grammatical Devices in STEM**

Grammar can be loosely described as the set of structural patterns that govern the composition of writing within a specific cultural or social context, including those of specific academic disciplines. This page focuses on some of the grammatical structures that are particularly important for those writing in STEM fields. Each grammatical structure allows writers to communicate clearly and purposefully to their audience.

For a more comprehensive list, and for more detailed information, you might find it helpful to refer to [The Purdue Online Writing Lab resources](https://owl.purdue.edu/). The Purdue Online Writing Lab resources site is a free, high-quality resource for writing help.

**Articles: Using the definite article – ‘The’**

In STEM fields, writers use the definite article ‘the’ to refer to something specific (or ‘definite’).

The important thing to bear in mind is that a word on its own cannot necessarily be categorized as requiring the definite or indefinite article; instead, it is the way that you refer to that word that determines which article you should use.

For example, you can write: “I saw ***the anteater*** at the zoo,” if you are referring to a specific anteater (perhaps there is only one, or this anteater has been in the news lately and people can be expected to know the specific anteater you are referring to). However, if you saw one anteater of five or six that were in the zoo, you should write: “I saw ***an anteater*** at the zoo.”

One quick tip to see whether you require an article in your writing is to read the sentence without it and see if it means the same thing; if it does, then you can safely remove the article.

For example: “Anteaters like ***the*** sunshine,” means the same thing when written as: “Anteaters like sunshine,” so you need not use the definite article in this case.

**Articles: Using the indefinite articles - ‘A’ and ‘An’**

Writers in STEM fields use the indefinite articles, ‘a’ or ‘an’, to refer to something non-specific (or ‘indefinite’) in their writing.

You should speak a word rather than read it to help you decide whether to use the indefinite article ‘a’ or ‘an’; although there are some exceptions, you should generally use ‘a’ when referring to a word that makes a consonant sound, and use ‘an’ when referring to a word that makes a vowel sound.

For example, you should write: “***A rabbit…***” or: ***“A giraffe…”*** because these words begin with consonants (and make consonant sounds when spoken). However, you should write: ***“An elephant…”*** or: ***“An anteater…”*** because these words begin with vowels and make vowel sounds when spoken).

The reason that it is helpful to speak words aloud when deciding whether to use ‘a’ or ‘an’ is because ‘silent letters’ could otherwise confuse you when simply seeing them written.

For example, you should write that: “Professor Reilly scored ***a hat-trick,”*** (because the ‘h’ in this word makes a consonant sound), but you should write: “The same player acted in ***an honourable*** way when passing up another goal due to an opposition player being injured,” (because the ‘h’ in this word is silent, which means the ‘o’ is the first letter you hear, and this ‘o’ makes a vowel sound).

This same general rule applies when using acronyms in your writing, which is why you should write: “***A NASA*** spacecraft is currently taking pictures of Mars,” but: ***“An EPA*** directive ensures that businesses attempt to reduce their carbon emissions.”

**Tenses**

Tenses help writers communicate **when** something happened (or will happen). For example: “I ***study*** biology,” refers to the present (I am currently studying biology), whereas: “I ***studied*** biology,” refers to the past (as it implies that I *no longer* study biology).

There are six basic tenses that we use on a frequent basis, and these are highlighted below, with examples. *Note: Consider how the implication of the sentences written for the Present Perfect and Simple Past differ based on the addition of one word (have).* Although it might be useful to know the differences between these six basic tenses, and to be able to write simple sentences in each one, the most important thing is to be able to recognize when the tense shifts in your writing. Tense-shifting can lead to confusion for your reader. For that reason, you are advised to use the same tense within each sentence (and often within a complete paragraph).

1. Simple Present: I study biology
2. Present Perfect: I have studied biology for 12 years
3. Simple Past: I studied biology for 12 years
4. Past Perfect: I had studied biology
5. Simple Future: I will study biology
6. Future Perfect: I will have studied biology

How might your audience interpret each statement?

For example, writing: ***“I have studied biology for 12 years, and I also study chemistry,”*** might be confusing because it’s not clear from this sentence how long you have studied chemistry for. Had you written everything in the present perfect tense (***I have studied biology for 12 years, and I have also studied chemistry for seven***) this potential confusion disappears.

**Subject/Verb Agreement**

In scholarly writing within STEM fields, it is important to ensure that the verb in each sentence matches or “agrees with” the subject of the sentence. The three examples below outline some particularly tricky sentence structures.

Tip: Remember throughout that the subject comes at the start of a sentence, and it is this – and its relationship with the main verb - that is important.

1. Do not be distracted by anything that comes in between the subject and the main verb, as in:

* “ Our friend Suzy, along with her fellow physics club members, is **[NOT ‘are’]** anxious about tomorrow’s test.”
* “ My classmate, with all his textbooks, takes up **[NOT ‘take up’]** a whole library desk.”

2. Collective nouns that imply more than one person/thing are involved are still treated as singular subjects, as in:

* “ The team runs **[NOT ‘run’]** during training.”
* “ The Physics Club watches **[NOT ‘watch’]** videos at their meetings.”

3. When your writing includes a compound subject that is joined by ‘or’ or ‘nor’, the verb should agree with the part of that subject that is closest to the verb, as in:

* “ Neither Suzy nor her friends, Claire and Ash, want **[NOT ‘wants’]** to take the new class.”
* “ Alana or Jonny is [NOT ‘are’] is going to write up the lab report.”

**Parallel Structure**

Much like consistency in verb tense, consistency in the form of linked parts in a piece of writing is important for readability. By this, we mean that the verb endings and related phrases and clauses within a sentence should all follow the same pattern.

For example: “Scientific understanding is improved by researchers **exploring new possibilities** and **communicating their findings**,” is written in parallel form and sounds smooth when you hear it.

On the other hand: “Scientific understanding is improved by researchers **exploring new possibilities** and when their findings are communicated,” is not written in parallel form, and is consequently harder to interpret. This should be corrected by changing the red portion to “…**communicating their findings**.”

Parallel structure in your writing is useful whether you are writing complete sentences or listing things.

For example, in this resource we are hoping to help you: **use** the definite and indefinite articles **appropriately**, **write** your tenses **consistently**, **check** that your subjects and verbs align **correctly**, and **ensure** that the parallel structure of your writing reads **smoothly**.

**Further reading:**

* [George Mason University’s The Three Common Tenses Used in Academic Writing](https://writingcenter.gmu.edu/guides/the-three-common-tenses-used-in-academic-writing)
* [Purdue Online Writing Lab’s guide on Parallel Structure](https://owl.purdue.edu/owl/general_writing/mechanics/parallel_structure.html)
* [University of Toronto’s guide on Using Articles](https://advice.writing.utoronto.ca/english-language/articles/)